

AD-A272 012 ATIC PAGE



1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 24 Dec 89	3. REPORT TYPE AND DATES COVERED In-Progress 14 Mar 90
4. TITLE AND SUBTITLE Commercial Training Device Requirement (CTDR) for Initial Entry Rotary Wing (IERW) Aviation Training Helicopter			5. FUNDING NUMBERS CARDS CTDR 0565R
6. AUTHOR(S) U.S. Army Training Support Center ATTN: ATIC-DMO Fort Eustis, VA 23604-5166			8. PERFORMING ORGANIZATION REPORT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Project Manager, Training Devices ATTN: AMCPM-TND-RR Central Florida Research Park 12350 Research Parkway Orlando, FL 32826-3276			10. SPONSORING/MONITORING AGENCY REPORT NUMBER CARDS CTDR 0565R
11. SUPPLEMENTARY NOTES TRADAOC approved this CTDR on 24 Dec 89.			
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for Public Release; Distribution is Unlimited.			12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 words) The IERW Helicopter shall be of new manufacture and be Federal Aviation Administration (FAA) certified in accordance with Federal Aviation Regulation Part 27 for normal rotorcraft category (dual pilot) day/night and instrument flight rules.			
14. SUBJECT TERMS CARDS CTDR 0565R; Training Device; Initial Entry Rotary Wing Aviation Training Helicopter; Helicopter, training;			15. NUMBER OF PAGES 10
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT SAR





DEPARTMENT OF THE ARMY
U. S. ARMY TRAINING SUPPORT CENTER
FORT EUSTIS, VIRGINIA 23604-5166

REPLY TO
ATTENTION OF

ATIC-DMO (350)

14 MAR 1990

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Commercial Training Device Requirement (CTDR) for Initial Entry Rotary Wing (IERW) Aviation Training Helicopter

1. Reference Army Regulation 71-9, 20 February 1987, Materiel Objectives and Requirements.
2. Subject CTDR has been approved on 24 Dec 89 by HQ TRADOC and on 13 Feb 90 by HQ AMC. Implementing instructions applicable to this device are:
 - a. System Designation: IPR.
 - b. Materiel Developer: AMC.
 - c. Combat Developer: TRADOC.
 - d. Trainer: TRADOC.
 - e. Logistician: USALEA.
 - f. Operational Tester: TRADOC.
 - g. TRADOC Proponent: U.S. Army Aviation Center
Fort Rucker, AL
 - h. CARDS Reference Number: 0565R.

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3. The document is forwarded to major Army commands, other services, and other DOD agencies for appropriate action. It is forwarded to all other addressees for information.

4. Point of contact for this action is Mr. Hal Hansen, AUTOVON 927-4218/5843.

FOR THE COMMANDER:

Encl

Thalia B. Church
THALIA B. CHURCH
Captain, AG
Adjutant General

93-26074



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ATIC-DMO
SUBJECT: Commercial Training Device Requirement (CTDR) for
Initial Entry Rotary Wing (IERW) Aviation Training Helicopter

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(CONT)

COMMERCIAL TRAINING DEVICE REQUIREMENT

1. Title:

a. Title: Nondevelopmental Item (NDI) Initial Entry Rotary Wing (IERW) Aviator Training Helicopter and Associated Training Devices.

b. CARDS reference number: 0565R

2. Category.

<input type="checkbox"/> Army-wide	<input checked="" type="checkbox"/> Command Peculiar
<input checked="" type="checkbox"/> \$15,000 and Over	<input type="checkbox"/> Less than \$15,000

3. Currently On Hand. USAAVNC is utilizing approximately 247 UH-1H aircraft for IERW training. These aircraft conduct primary and instrument training for all IERW students and combat skills training for students in the UH-1H track of multitrack.

4. Justification.

a. The new training helicopter (NTH) will replace the UH-1H in the IERW primary, instrument, and navigation phases.

b. The cost of operating the NTH is significantly less than operating the UH-1. Science Application International Corporation (SAIC) has completed an economic analysis (EA) of the IERW core, comparing the cost of UH-1H operation with high- and low-cost training helicopters. The EA has been reviewed by TRADOC and DA staffs and demonstrates a potential cost savings/avoidance of approximately \$600 million (FY 89 dollars) by utilizing a new lower-cost training helicopter over an expected 20-year life cycle.

5. Aircraft Characteristics. The IERW NTH shall be of new manufacture and be Federal Aviation Administration (FAA) certified in accordance with Federal Aviation Regulation Part 27 for normal rotorcraft category (dual pilot) day/night visual and instrument flight rules.

a. Cockpit/cabin environment.

(1) Cockpit shall have a minimum of three seats. Each seat must allow visibility of flight and navigation instrumentation.

(2) Adjustable flight controls shall be installed, as a minimum, for the IP and Student Pilot; a third set of controls for the jump seat is desirable. Design and configuration of cockpit controls and displays should facilitate transition into present aircraft which utilize conventional "steam gauges," such as the horizontal and vertical situation indicators and primary

navigation instrument displays. Adaptation to a fully integrated "glass" cockpit is optional.

(3) Climate control shall include the necessary equipment to maintain the cabin corrected air temperature between +65°F and +85°F.

(4) The cockpit shall be lit with blue-green lighting that is capable of being dimmed to balance individual groupings of instrumentation; i.e., navigation, engine, etc. A hand-held utility/map light shall be installed for each seat position.

(5) Aircraft exterior lighting shall include day/night (red/white) strobe anticollision lighting and an internally adjustable landing light.

(6) The aircraft shall be equipped with adjustable crashworthy seats and five-point occupant restraint systems.

b. Navigation/communication capabilities.

(1) FAA certified to operate in both day and night visual meteorological conditions (VMC) and instrument meteorological conditions (IMC) with commercial avionics in the Fort Rucker environment and the national airspace system.

(2) Equipped with automatic direction finding (ADF), VHF omnidirectional radio (VOR), encoding altimeters, instrument landing system (ILS), marker beacons, and transponder.

(3) Equipped with at least two radio systems (2-VHF) capable of two-way communications within the basefield/stagefield system at Fort Rucker and in the federal airway system.

(4) The aircraft shall be equipped with a dual-axis rotary wing emergency locator transmitter (ELT).

c. Performance.

(1) NTH is required to be powered by turbine engine(s) compatible with currently used aviation jet fuels.

(2) Cruise airspeed of at least 90 knots is required.

(3) Year-round operational capability in the Fort Rucker environmental conditions (95°F and 3,000-foot density altitude) with full fuel and a crew of three (200 pounds each). Capable of 500 fpm vertical-rate-of-climb (VROC) and hover-out-of-ground-effect (HOGE) year-round.

(4) Rotor system that will ensure safety in power-off autorotational training maneuvers.

(5) An antitorque system which allows year-round HOGE with crew of three, full fuel, and a 20-knot wind from any quadrant.

(6) Able to start-up and shut-down in winds up to 35 knots with 20-knot gust spread without incurring damage.

d. Controls and drive train.

(1) Aerodynamically or electronically stable to accommodate extended flight under actual instrument conditions without undue pilot fatigue.

(2) Assured ability to safely continue flight in event of hydraulic boost or electronic stabilization failure (if so equipped).

(3) Control authority at the IP station of at least 10 percent mechanical advantage over the student station.

(4) To ensure positive habit transfer cyclic, collective and antitorque control inputs will replicate current U.S. Army helicopters.

e. Fuel system.

(1) Fuel range of 2 hours at cruise speed plus 30-minute reserve at cruise power is required; 3 hours at cruise speed plus 30-minute reserve at cruise power is desired.

(2) Aircraft shall be equipped with an FAA-certified crash-worthy fuel system.

(3) Closed-circuit refueling compatible with current U.S. Army ground support equipment.

f. Maintainability, supportability, and reliability.

(1) Drive train, landing gear, avionics, and airframe strength and resiliency sufficient to withstand repeated training use associated with ground contact maneuvers, such as full touchdown autorotations.

(2) Appropriate access doors/inspection ports to allow ready access to and full visibility of critical components for safety of flight determination and ease of maintenance.

(3) Operations and support (O&S) cost for the NTH shall be no more than one-third of the O&S cost established for the UH-1 helicopter.

g. Airframe, components, and miscellaneous.

(1) Glass or synthetic-compound wind-screen designed to withstand continuous use of the windshield wiper system (if installed) without damage.

(2) Wind-screen compound to avoid massive injury caused by splintering in a survivable crash sequence. Capable of withstanding bird-strike impact in accordance with current FAA specifications for commercial rotorcraft.

(3) Visibility from a combined pilot and copilot position of at least 300 degrees horizontally, 90 degrees up, and 60 degrees down with minimum obstruction to visibility.

h. Logistics support considerations. The NTH shall be maintained by complete Contractor Logistics Support (CLS).

i. Training. Twelve cockpit procedural trainers (CPT) will provide start-up, shutdown, and emergency procedures training. Each CPT will replicate the new training aircraft cockpit. Each CPT will allow the student to practice skills required to successfully identify cockpit switches necessary to perform start-up, shutdown, and emergency procedures.

j. A system safety program IAW MIL-STD-882B, tailored to the NDI process, will be established to ensure that safety, consistent with mission requirements, is considered in the NTH acquisition. Hazards will be identified, evaluated, and eliminated or controlled throughout the life cycle.

6. Distribution. All training aircraft and associated training devices will be utilized, stored, and maintained at Fort Rucker, Alabama.

7. Source. Currently, there are six vendors who have displayed interest in supplying the NTH. These potential suppliers are Schweizer Aircraft Corporation, Aerospatiale, Enstrom Helicopter Corporation, Imagineering Training Services, Spitfire Helicopters, and McDonnell Douglas Helicopter.

8. Cost.

a. Estimated cost per item including an aircraft, a proration of the training devices, initial spares, and repair parts is \$500,000.00 (in FY 89\$).

b. Total training aircraft to be leased is 205. One hundred aircraft will be VFR aircraft only. One hundred and five aircraft will be instrument flight rules (IFR) certified, 55 of which will be IFR equipped. The other IFR-certified aircraft will be visual flight rules equipped.

c. The total lease cost is based on an assumed 20-year lease with a straight line depreciation of the equipment, 9.5 percent annual interest, and monthly payments on the residual value. The lease payment profile by fiscal year is as follows:

Fiscal Year	Cost per FY
92	\$ 6.9M
93	\$13.8M
94	\$15.2M
95	\$14.6M
96	\$14.1M

9. Date Required. The delivery of the first training aircraft and associated training devices is required by 2d Qtr FY 92. The first training class is to start 4th Qtr FY 92.

10. Support Organizations. Contractors provide both IERW core flight training and maintenance support for the UH-1H. CPT instruction is conducted by U.S. Army personnel. Contractor support will continue utilizing the new IERW training aircraft. There is no scheduled change for training with the new CPTs. The aircraft manufacturer shall provide an initial training package for the training of 20 instructor pilots and approximately 5 government quality assurance personnel and designated maintenance personnel in the areas of maintenance test pilot, power plant, airframe, and avionics.

11. Impacts.

a. Facility/construction requirements. None.

b. Personnel requirements. No new personnel requirements for operation or maintenance of training aircraft or associated training equipment.

c. The new training helicopter replaces the UH-1H for the primary, instrument, and navigation phase of the IERW. Displaced UH-1s will be disposed IAW the Army Aviation Modernization Plan.

d. Special transportation requirements. None.

12. Spare Parts. None. CLS will be utilized.

13. Special Tools. None. CLS will be utilized.

14. Funding Summary.

	FY 92	FY 93	FY 94	FY 95	FY 96
INVESTMENT	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
O & S	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
MIL CON	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
LEASE (OMA					
FY 89 \$M)	<u>80/6.9</u>	<u>180/13.8</u>	<u>205/15.2</u>	<u>205/14.6</u>	<u>205/14.1</u>

15. Point of contact: MAJ Jack A. Cook, ATZQ-TD, AV 558-3096/5449.

ANNEX A: Preliminary Training Device Study

ANNEX A

PRELIMINARY TRAINING DEVICE STUDY (PTDS)

The economic analysis with supplement is substituted in lieu of the PTDS.